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DEPARTMENT OF THE ARMY  
U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER  
PICATINNY ARSENAL, NJ 07806-5000



REPLY TO  
ATTENTION OF

**AD-A277 845**



SMCAR-AEP (1mm)

24 MAR 1994

MEMORANDUM FOR Commander, Defense Technical Information Center,  
Building 5, Cameron Station, Alexandria, VA,  
22304-6145

SUBJECT: Release of Performance Oriented Packaging Compliance  
Report

1. The enclosed report (DOD POP HMTR/ADY 94-007) entitled:  
"Performance Oriented Packaging (POP) Testing of Packaging for  
Ground Emplaced Mines (i.e., M74, M75 and M79 Mines)" is hereby  
submitted to the Defense Technical Information Center for formal  
release. Notification of the formal release should be made to:

U.S. Army Armament Research, Development and Engineering  
Center, ATTN: Mr. Joseph Granuzzo (SMCAR-AEP), Picatinny  
Arsenal, N.J. 07806-5000

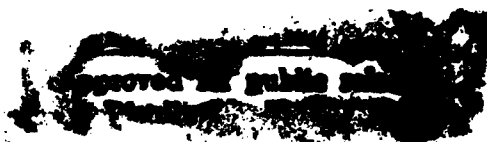
2. If there are any problems, questions or comments regarding  
this report, contact Mr. Joseph Granuzzo at 201-724-2156  
(DSN 880-2156).

*Gene Farrell*

Encl  
as

GENE FARRELL  
Acting Chief, Packaging Division

**DTIC**  
**ELECTE**  
**APR 05 1994**  
**S E D**



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## REPORT DOCUMENTATION PAGE

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OMB No. 0704-0188

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17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP			
19. ABSTRACT (Continue on reverse if necessary and identify by block number) This Performance Oriented Packaging (POP) report is for the Ground Emplaced Mines (M74, M75, & M79 Mines) packed 40 per metal ammunition container IAW drawing 12624514. This report describes results of testing conducted on a similar packaging which is used as an analogy for this item.					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION Unclassified		
22a. NAME OF RESPONSIBLE INDIVIDUAL STEVE RUFFINI			22b. TELEPHONE (Include Area Code) 201-724-2515		22c. OFFICE SYMBOL SMCAR-AEP

I. Report Number: DOD POP HMTR/ADY 94-007

II. Title: Performance Oriented Packaging (POP) Testing for Packaging of Ground Emplaced Mines (i.e. M74, M75 and M79 Mines)

CONTAINER DRAWING NUMBER: 9342676

Author: Joseph P. Granuzzo

Performing Activity: U.S. Army Armament Research,  
Development and Engineering Center  
(ARDEC)

Address: Department of the Army  
Commander, U.S. Army ARDEC  
Attn: SMCAR-AEP  
Picatinny Arsenal, N.J. 07806-5000

Date: February 1994

Distribution Statement A.

Approved for public release; distribution is unlimited.

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## 1. DATA SHEET:

### a. CONTAINER:

Type: Box, Ammo, Packaging: Steel; Level A Container, IAW AR-700-15 and AR-746-1.  
Dwg. 9342676: Shipping & Storage Container, Mine.  
UN CODE: 4A1  
Material: Low and Intermediate tensile strength carbon steel plates of structural quality ASTM A283.  
Capacity: 4974.3 CU. IN.  
Dimensions: Outside: (length, width, height)  
CM 69.3 X 34.8 X 33.8 (INCH 27.3 X 13.7 X 13.3)  
Tare weight: Est. 22.70 kg (50 lbs) per Dwg. 12624514  
Closure: Tee bolts torqued to 16.± 2 foot pounds  
Gasket sealed

### b. PRODUCT:

System: Ground Emplaced Mine Scattering System (GEMSS):  
Mines  
Name: M74 AP: Mines, Dwg. 9292227-1 & -2  
M75 AT: HE Mines, Dwg. 9292600  
M79 Practice Mines (Inert), Dwg. 9317994  
DODIC: M74: K151  
M75: K184  
M79: K234  
United Nations No.: UN0137  
United Nations Packaging Group: II  
Physical State: Solid

### c. PACKAGING AND MARKING:

Dwg. 12624514: Pkg & Mkg for Shipping and Storage Container,  
Mine for Mine, AT: HE, M75; Mine, AP: HE, M74 or  
Mine, AT, PRAC: M79

Amount per Container: 40 Mines in 8 Sleeves (Fiber)

Gross Weight: M74: 83.18 kg (183 lbs)  
M79: 91.36 kg (201 lbs)  
M75: 99.55 kg (219 lbs)

Dwg. 12624515: Pkg & Mkg for Container, Fiberboard for Mine,  
AP: HE, M74; Mine, AT: HE, M75; or Mine, AT:  
PRAC; M79

## **2. BACKGROUND, TESTS, AND RESULTS:**

The Department of Transportation (DOT) per Code of Federal Regulations (CFR, Title 49, Parts 100-180, dated 1 Oct 1992, requires that Hazardous Materials should be packed in a container that passes the Performance Oriented Packaging (POP) tests.

The GEMSS shipping and storage container per drawing 9313655 is of the same design as the container per drawing 9342676, however, slightly smaller and weighs less.

Reference the following documents:

- a. Code of Federal Regulations, Title 49, Dated 1 October 1992.
- b. POP Report DOD POP HMTR/ADY 94-006

Instead of testing the specific container used for the GEMSS mines packed in accordance with 12624514, the container is certified to meet the requirements of Reference 2a based on a previously tested GEMSS container with the following weight and dimensions:

Tare weight: Est. 25.00 kg (55 lbs)  
Dimensions: Outside: (length, width, height)  
CM 69.3 X 35.8 X 38.6 (INCH 27.3 X 14.1 X 15.2)

Stacking Test, Loose Cargo Test and Four Foot Drops were conducted in accordance with Reference 2b. The results indicated no leakage or spillage of contents from the metal container following any of the tests, thus satisfying the requirements of the 49 CFR. This falls within the guidelines for analogy IAW Variation 3 of PPara. 178.601(g) of Reference 2a. Thus, the container design per ARDEC drawing 9342676 is considered to be safe for domestic and international transportation in accordance with Performance Oriented Packaging Regulations by analogy.

### 3. CONCLUSION:

Based upon the above POP testing, the following UN POP symbol has been applied to the GEMSS Shipping and storage container (Dwg. 9313655 when loaded with M74 and M75 mines IAW drawing 12624514:



----- NOTE 1  
/  
4A1/Y \*\* /S/\*\* ----- NOTE 2  
USA/DOD/AYD

\*\* NOTE 1 - Insert Mass Density (MD) as follows:

M74: MD = 93  
M75: MD = 110

\*\* NOTE 2- Insert last 2 digits of year packed.